22 00 00 • PLUMBING

SECTION INCLUDES

Toilet
Lavatory
Tub and Shower Surround
Faucets and Fittings
Kitchen Sinks and Fittings
Washing Machine Hookups
Domestic Water Heaters
Piping
Pipe Insulation
Meters
Site Irrigation

RELATED SECTIONS

06 10 00	Rough Carpentry
07 90 00	Sealants
09 30 00	Tile
09 65 00	Resilient Flooring
12.35.00	Cabinets
23 00 00	HVAC
26 00 00	Electrical
33 00 00	Site Utilities

Filed Sub Bid

M.G.L. c.149 §44F

Plumbing is a stipulated filed sub-bid category under M.G.L. Chapter 149, §44F. For projects with a total estimated cost over $100,000 and a cumulative estimated cost for the plumbing (in all sections) over $20,000, the filed sub-bid requirements must be followed.

In addition, if pipe Insulation is estimated to cost over $10,000, the filed sub-bidders for this trade shall be explicitly instructed to list sub-subs on their Form for Sub-bid.

TECHNICAL STANDARDS

For all plumbing-related items, consult the LHA to determine if they have preferences for specific manufacturers so that they can standardize maintenance across their building stock.

If there are specific manufacturer's preferences, a proprietary specification will be required. It is the designer's responsibility to prepare a resolution specifically for this project itemizing the proprietary items for a Housing Authority's Board vote before the bid documents are published.

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TOILET

MATERIALS

Gravity flush fixtures are preferred to pressure assisted fixtures. Existing flushometer valve fixtures should remain, unless extensive modernization work is undertaken.

In general, water closets within the dwelling units should be tank-type fixtures to keep with the residential nature of the facilities.

Flushometer valves should be limited to public and office facilities.

Two piece, elongated bowl, low-flow, 1.6 gallon toilets are required.

In elderly and special needs housing (Chapters 667, 167 and 689) a comfort height toilet >16 inches bowl height is required.

LAVATORY

DESIGN

If the sink is to be integral with the countertop, it should be specified under Cabinets and installed by the General Contractor; with the plumber supplying and installing fittings and hook-up.

MATERIALS

Both vitreous china and cast iron wall-hung lavatories are acceptable. China is easier to keep clean; cast iron is less costly and more durable. Avoid enameled steel and PVC because they are not sufficiently durable.

In special needs (Chapters 167 and 689) integral sink and countertops are preferred.

Tub and Shower Surround

DESIGN

Never reline existing tubs. Refinishing and reglazing has been successful under certain circumstances

Replace a double hung window in the tub surround with an awning window over a fixed panel. See detail found at the end of this section.

MATERIALS

❑ **New Construction**:

In family housing, (Chapters 200 and 705) cast iron tubs with full height large format porcelain tile with epoxy grout. Solids surface surrounds, (e.g. - Corian, Swanstone) are acceptable.

In special needs (Chapters 167 and 689) a composite tub is acceptable.

One piece composite showers are preferred in bathrooms with no tub.

Provide access to bath tub traps

❑ **Modernization**

In elderly housing (Chapter 667) if replacing the tub use a composite shower designed to replace a tub.

FAUCETS AND FITTINGS

MATERIALS

Provide mechanically fastened (adjustable or swing) traps with clean out for ease of maintenance.

Plumbing traps may be chrome-plated or PVC; PVC traps should be concealed from view.

Showers should have a flow rate of no more than 2-1/2 gallons per minute.

Use dependable, pressure balancing, anti-scald shower valves with integral service stops.

Install floor drains in wheel in showers, these floor drains will require trap primers. Use appropriate floor material in areas with floor drains.

KITCHEN SINK AND FITTINGS

DESIGN

In barrier free units:

- ❑ provide a removable panel for access to pipes below the sink
- ❑ select a sink with an offset drain to provide additional clearance, offset should go to end of kitchen circle and
- ❑ coordinate the location of the drain for ease of access to appliance and work counters
- ❑ insulate all piping under barrier free sinks

MATERIALS

Sinks should be high quality, sound-deadened stainless steel; minimum 18 gauge.

Sinks should be 10” deep

Select high quality, easy maintenance, single-lever faucets for elderly. The flow rate must meet current code standards.

A spray feature is recommended.

Garbage disposals are not recommended.

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WASHING MACHINE/ DRYER HOOKUPS

DESIGN

In common laundries:

- ❑ Most LHAs lease the laundry equipment.
- ❑ Provide one hookup for every 3 units.
- ❑ Front loading washers are preferred.
- ❑ Provide one hookup in each family unit

In unit laundries:

- ❑ Locate washing machine hookups in close proximity to dryer hookups.

Provide a pan under the washing machine if located other than in basement

Verify if LHA has preference for gas or electric dryers.

Locate dryers on an exterior wall to keep vent/exhaust runs as short as possible. Lengthy runs tend to contribute to interior moisture problems. Avoid common dryer ducts and do not combine dryer ducts s with other exhaust systems.

Keep dryer exhausts away from kitchen exhausts.

Always vent dryers to the outside.

Do not locate dryer exhausts near makeup air for heating and hot water equipment, lint and other laundry agents (chlorine fumes) affect burners.

DOMESTIC WATER HEATERS

DESIGN

Test the water before design; provide treatment/filtering in severe conditions.

The first priority - The system must have the capacity to meet the demand.

The second priority - is energy efficiency. The system should not be oversized so that it uses more energy than necessary and wastes energy during off-peak times.

Size domestic hot water systems according to a realistic scenario about the peak time demand. Design to 140°F and add mixing valves. Water must be delivered at 112°F at the tap; take into account line loss when designing the system.

For special needs and elderly congregate units, heat and domestic hot water may be separate systems. Showering in these units tends to be a drawn out activity.

For gas-fired equipment, provide adequate combustion and ventilation air, and keep pipes that might freeze away from outdoor air openings.

It is preferred that combustion air be supplied directly from outdoors where practical and not from within the apartment.

Keep water heaters on first floor or in basement, avoid upper level installations. When unavoidable install a metal drain pan under equipment with a drain with a trap primer

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DOMESTIC WATER HEATERS, CON'T

MATERIALS

Gas-fired direct vent equipment is preferred and should be glass-lined

Electrically heated equipment should be stone-lined.

A jet-action feature at the point of supply is desirable to reduce sediment which can cause corrosion and coil damage.

Local water conditions will affect the longevity of domestic water heaters. If the equipment will require frequent servicing or replacement, specify simple systems that will be easy to access.

PIPING

DESIGN

Do not install water piping or fixture traps in exterior walls, overhangs or unheated spaces.

Locate frost proof wall hydrants with keyed faucet handles in accordance with Plumbing Code requirements.

MATERIALS

In general, type "L" copper, PEX or CPVC shall be used for domestic cold and hot water. (Use of PEX is limited to 3 stories).

Gas piping can be carbon steel with CSST piping for appliances.

Consider the corrosive quality of the water when designing the system. If there is a problem, consider Type "K" copper, PEX or CPVC for domestic water piping.

Pressed fittings are acceptable in accessible locations.

In general, exterior water piping up to 3 inches in diameter should be type "K" copper tube. Larger pipe should be CPVC or cement-lined ductile iron. Check with the local water board for their requirements.

For soil, waste and vent piping, use PVC wherever possible. Where PVC is not allowed by code, use service weight cast iron with clamp fittings above grade and gasket joints below grade. Keep waste and vent piping out of exterior walls whenever possible.

Waste traps should be adjustable (i.e., threaded, not soldered); one-piece traps are not acceptable. If PVC waste traps are used, specify threaded joints instead of solvent joints to allow for easy removal. Traps should have clean outs.

Valves: for ease of servicing, provide separate ball valves for: the kitchen, each bathroom, washer hook-up, domestic hot water inlet, and domestic hot water outlet.

Valve off risers and individual apartments in multi family installations.

Do not use gate valves because they tend to become maintenance problems.

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Provide high quality, keyed, frost-proof exterior wall hydrants. Some lower grade frost proof wall hydrants tend to fail prematurely. Valve off wall hydrants from inside units.

Floor Drains: Minimize use if possible; trap primers are required for all floor drains

PIPE INSULATION

DESIGN

Cold water piping insulation should be at least ½-inch thick and be vapor sealed to prevent condensation

Insulation thickness should be in accordance with the Building Code on hot water piping.

MATERIAL

Provide high density fiberglass insulation for pipes. Foam rubber is not acceptable.

Use metal-fastened, pre-formed insulation covers on elbows and tees.

METERS

DESIGN

Avoid locating meters in overly conspicuous locations such as at the approach to the front entry; however, also avoid placing meters where pipe runs from them will be unnecessarily long. A useful strategy is to locate meters near utility rooms on the sides of the buildings.

Preference is to not have a water meter in the same room as an electric meter.

SITE IRRIGATION

DESIGN

The necessity for site irrigation, sprinklers, fountains and other site water features is predicated by site design requirements. Design procedures and criteria are determined by the specific needs of the system being designed as well as by governing local codes and regulations. See Construction Standards for Irrigation (32 80 00) for specific design criteria.

Coordinate the design and installation of site irrigation systems with plumbing design requirements.